

NASA Status for Beacon Manufacturer's Workshop

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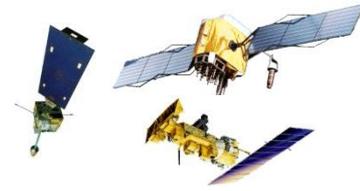
Topics



- **SARLAB**
- **GOES-R**
- **DASS**
- **Beacon spec work**
- **Battery Work**



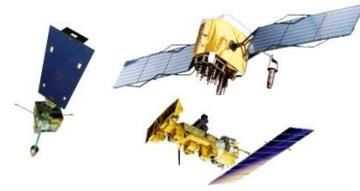
SARLab



- **SARLab is the facility that replaced the old SEDL satellite test site and also houses the DASS Proof of Concept ground station.**
- **NASA has a maintenance contract for the EMS LEOLUT and GEOLUT and Spirent GPS Simulator**
- **NASA has 406 receive capability on nearby col tower for calibration, antenna pattern measuring purposes**
- **Failures in 406 LHCP omni antenna transmit capability**
- **Tower weld failure in Sept 2010 impacted directional transmit capability:**
 - **Safety investigation of tower failure is complete**
 - **Replacement tower procurement underway**
 - **auxiliary directional transmit capability received- will be installed this month limited view of sky**



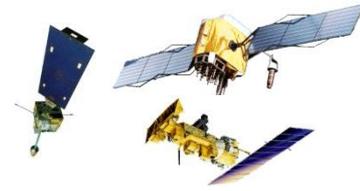
GOES-R Work



- **Facilitated agreement between NOAA SARSAT and GOES-R for downlink frequency change and tighter spacecraft receiver filter specifications (modeled after R.012 for Galileo)**
- **Downlink frequency changes by 50KHz (to 1544.55 MHz) to make master oscillator circuit less costly for GOES-R,**
- **Increased filtering to counter increased EM activity in adjacent bands**



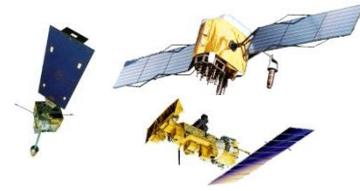
DASS Status



- **Nine DASS repeater equipped GPS satellites in orbit**
- **Agreement with Air Force to get DASS on Block 3B.**
- **Working to get better receive filtering on Block 3B**
- **Participated in MEOSAR TG and EWG**
- **Proof of Concept Ground Station**
 - TSI under contract for maintenance and upgrades
 - TSI is upgrading station to maintain currency with marketplace



Beacon Work



■ Second Generation Beacon Spec activities

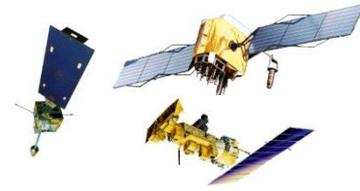
- Two C/S EWG's dealing with operational requirements for second generation beacons resulted in R.017 requirements document
- Paper written for JC-25 attempting to interpret R.017 to get message lengths: many issues found - need of clarification, and more detailed requirement; Example: beacon/user identification field in T001 using anywhere from 18-46 bits.
- EPIRB spec revision in process at RTCM
- New answer sheets using new T.007 nav tests for beacons employing the keep PDF-1 constant rules

■ Studies

- IN 2010, TSI completed study on using CCSDS specified convolutional and Reed–Solomon coding schemes. Simulation results did not show any improvement over existing BCH coding. Reason probably has to do with code's suitability for small blocks. Presented at Sept 2010 EWG
- Wrote paper for the Sept 2010 Experts' Working Group on using spread spectrum techniques for Next Generation Beacon
- Planning experiments with spread spectrum messaging
- Follow-on coding study waiting for better message length determination



Li Ion Battery work



- In 2009, NASA was tasked by interagency Joint Working Group to chart a path forward given the new C/S interim Li Ion rechargeable type approval procedure.
- AT JC-24, proposed Changes to CS interim type approval process ; letter of compatibility only
- For JC-25, new problem found with using constant current to determine accelerated testing times: paper written proposing a change and also detailing a number of battery issues